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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/607,079 | 06/25/2003 | Leo Zhaoqing Liu | Rhodia.02036 us | 6545 |

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1601 MARKET STREET
SUITE 2400
PHILADELPHIA, PA 19103-2307

EXAMINER

WHITE, EVERETT NMN

| ART UNIT | PAPER NUMBER |
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1623

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/607,079 | Applicant(s) LIU ET AL. | |
| | Examiner EVERETT WHITE | Art Unit 1623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 21-37 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

Claims 22-28 and 30-37 are objected to because of the following informalities:
Claims 22-28 and 30-37 are dependent from claims previously canceled in a preliminary amendment, which is improper. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 21, 25, 30 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The statement set forth in Claim 21, lines 5 and 6, that "the unstaturated monomer-water soluble or water dispersible polysaccharide graft copolymer is depolymerized relative to the ungrafted polysaccharide" is not clear whether or not polymerization is intended as an additional step in the claimed method or as a process step, which is carried out simultaneously along with the irradiating step. The text "which is depolymerized to the ungrafted polysaccharide" does not flow with the previous text of Claim 21 or is not written as a process limitation for the claimed method.

In Claims 25, 30 and 31, in the absence of the specific modifications to the chemical core claimed (cellulose) or distinct language to describe the structural modifications or the chemical names of the modified celluloses of this invention, the identity of said modified celluloses would be difficult to describe and the metes and bounds of said modified celluloses that Applicants regard as the invention cannot be sufficiently determined because they have not been particularly pointed out or distinctly articulated in the claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 29-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Garnett et al (US Patent No. 3,522,158).

Applicants claim a polysaccharide grafted with an unsaturated monomer, said grafted polysaccharide being dispersible in water. Additional limitations in the dependent claims include specific unsaturated monomers and specific polysaccharides.

The Garnett et al patent discloses graft polymers which preparation involves a hydrophilic backbone polymer being irradiated in the presence of a solution of a monomeric vinyl compound (see abstract). See column 1, lines 41-46 of the Garnett et al patent wherein the backbone polymers include cellulose, any of its derivatives such as the aliphatic ethers and esters of cellulose which are hydrophilic. See column 2, 2nd paragraph of the Garnett et al patent wherein examples of the monomeric vinyl compound are set forth which include styrene, methylmethacrylate, acrylonitrile, acrylamide, vinyl pyridines, vinyl carboxylic acids, and many others. The grafted polymers of the Garnett et al patent anticipate the instantly claimed grafted polysaccharide when the polysaccharide is modified cellulose.

5. Claims 29, 35 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Restaino et al (US Patent No. 3,461,052).

Applicants claim a polysaccharide grafted with an unsaturated monomer, said grafted polysaccharide being dispersible in water. Additional limitations in the dependent claims include specific unsaturated monomers and specific polysaccharides.

The Restaino et al patent discloses graft copolymers wherein vinyl monomers are grafted onto hydrophilic polymeric substrates. See column 2, 1st paragraph wherein suitable substrates materials are listed, which include cellulose, wool, starch, alginic

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acid and the alginates, vegetable gums such, for example, as locust bean gum, guar flour, or gum tragacanth, gelatin, casein, pectin, polyvinyl alcohol, hydrophile high molecular weight polyalkylene glycols, and the like. Suitable vinyl monomers are listed in the 2nd paragraph of column 2, which include vinyl acetate, acrylic acid and its esters, methacrylic acid and its esters, acrylamide, acrylonitrile, styrene, vinyl toluene, vinyl pyridine, alkyl vinyl pyridines, divinyl benzene, butadiene, N,N-methylene bis-acrylamide, and the like. The grafted copolymers of the Restaino et al patent anticipate the instantly claimed grafted polysaccharide when the polysaccharide is guar, cationic guar, nonionic guar, locust bean gum, xanthan gum and amylose.

6. Claims 29, 33, 34 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Chuang et al (US Patent No. 4,831,097).

Applicants claim a cosmetic composition comprising a grafted polysaccharide.

The Chuang et al patent discloses a graft polymer that comprises on which is grafted a quaternised amino lactam, which was prepared by reacting a N-halomethyl lactam with a vinyl or acrylic compound having terminal tertiary amino groups. Chuang et al discloses that the graft polymer is used in cosmetics (see Derwent Abstract), which anticipate the instantly claimed cosmetic composition.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garnett et al (US Patent No. 3,522,158) in view of Becker et al (US Publication No. 2001/0020090).

Applicants claim a method for grafting an unsaturated monomer onto a polysaccharide comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer and a water soluble or water dispersible polysaccharide; (2) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide graft copolymer which is depolymerized relative to the ungrafted polysaccharide. Additional limitations in the dependent claims include specific unsaturated monomers and specific polysaccharides.

The Garnett et al patent discloses a process for the production of graft polymers by ionizing radiation, wherein a hydrophilic backbone polymer is irradiated in the presence of a solution of a monomeric vinyl compound (see abstract). See column 1, lines 41-46 of the Garnett et al patent wherein the backbone polymers include cellulose, any of its derivatives such as the aliphatic ethers and esters of cellulose which are hydrophilic, which embraces the instantly claimed water soluble and water dispersible polysaccharide. See column 2, 2nd paragraph of the Garnett et al patent wherein examples of monomeric vinyl compound are set forth which include styrene,

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methylmethacrylate, acrylonitrile, acrylamide, vinyl pyridines, vinyl carboxylic acids, and many others. The instantly claimed method differs from the process of the Garnett et al patent by claiming a depolymerization procedure. However, the Becker et al patent shows that degradation of cellulose ethers with radiation is known in the art (see paragraph No. [0003]).

One of ordinary skill in this art would be motivated to combine the teaching of the Garnett et al patent with the teaching of the Becker et al patent since both patents set forth preparation of cellulose ether products using radiation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to graft an unsaturated monomer such as vinyl compounds onto hydrophilic polymers such as a cellulose ether by irradiation as described in the Garnett et al patent wherein the irradiation also result in depolymerization of the cellulose ether in view of the recognition in the art, as suggested by the Becker et al patent, that use of radiation for depolymerization of cellulose ethers can be carried out at a specific setting to obtain a desired solution viscosity of the resultant product.

9. Claims 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Restaino et al (US Patent No. 3,461,052) in view of Becker et al (US Publication No. 2001/0020090).

Applicants claim a method for grafting an unsaturated monomer onto a polysaccharide comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer and a water soluble or water dispersible polysaccharide; (2) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide graft copolymer which is depolymerized relative to the ungrafted polysaccharide. Additional limitations in the dependent claims include specific unsaturated monomers and specific polysaccharides.

The Restaino et al patent discloses a process for the production of graft substrates by ionizing radiation, wherein a hydrophilic polymeric substrate is irradiated in the presence of a solution of a monomeric vinyl compound (see abstract). See

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column 2, 1st paragraph wherein suitable substrates materials are listed, which include cellulose, wool, starch, alginic acid and the alginates, vegetable gums such, for example, as locust bean gum, guar flour, or gum tragacanth, gelatin, casein, pectin, polyvinyl alcohol, hydrophile high molecular weight polyalkylene glycols, and the like. Suitable vinyl monomers are listed in the 2nd paragraph of column 2, which include vinyl acetate, acrylic acid and its esters, methacrylic acid and its esters, acrylamide, acrylonitrile, styrene, vinyl toluene, vinyl pyridine, alkyl vinyl pyridines, divinyl benzene, butadiene, N,N-methylene bis-acrylamide, and the like. The instantly claimed method differs from the process of the Restaino et al patent by claiming a depolymerization procedure. However, the Becker et al patent shows that degradation of a cellulose product (a polysaccharide) with radiation is known in the art (see paragraph No. [0003].

One of ordinary skill in this art would be motivated to combine the teaching of the Garnett et al patent with the teaching of the Becker et al patent since both patents set forth preparation of cellulose products using radiation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to graft an unsaturated monomer such as vinyl compounds onto hydrophilic polymeric substrates by irradiation as described in the Restaino et al patent wherein the irradiation also result in depolymerization of the cellulose in view of the recognition in the art, as suggested by the Becker et al patent, that use of radiation for depolymerization of a cellulose can be carried out at specific setting to obtain a desired solution viscosity of the resultant product.

Summary

10. All the pending claims are rejected.

Examiner's Telephone Number, Fax Number, and Other Information

11. For 24 hour access to patent application information 7 days per week, or for filing applications, please visit our website at www.uspto.gov and click on the button "Patent Electronic Business Center" for more information.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is (571) 272-0660. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson, can be reach on (571) 272-0661. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.


E.White


James O. Wilson
Supervisory Primary Examiner
Technology Center 1600